

REMARKS

Claims 1-30 and 32-49 are pending in this application. Claims 1, 12, 21, and 28 are amended herein. The application as presented is believed to be in condition for allowance.

In paragraph 2, the Office Action rejected claims 1-30 and 32-49 under 35 U.S.C. §103(a) as purportedly being obvious over Napolitano (6,219,693) in view of Starek (5,991,778). In paragraph 4, the Office Action rejected claim 1-30 and 32-49 under 35 U.S.C. §103(a) as purportedly being obvious over Napolitano and Starek and further in view of Wong (5,832,525).

Applicants traverse each of these rejections because the references, taken alone or in combination, fail to disclose or suggest all of the limitations recited in the rejected claims. Accordingly, withdrawal of these rejections is respectfully requested.

Claim 1

Claim 1 is directed to a storage system for use in a computer system including a host computer. The storage system comprises: at least one storage device having a plurality of user-accessible storage locations, the at least one storage device including at least one disk drive; a cache memory; and a controller, coupled to the cache memory and the at least one storage device, that controls access to the at least one storage device from the host computer, so that the at least one storage device is accessible to the host computer only via the controller, the controller being capable of generating data that is independent of any data passed from the host computer to the storage system and writing the generated data to at least two non-contiguous user-accessible storage locations on the at least one storage device in response to a communication from the host computer that does not include the generated data to be written to the at least two non-contiguous user-accessible storage locations, without writing the generated data to at least one user-accessible storage location disposed between the at least two non-contiguous storage locations so that any data in the at least one user-accessible storage location is preserved.

As discussed in Applicants' prior communications, neither Napolitano nor Starek discloses or suggests a controller in a storage system that is capable of generating data independent of any data past from the host computer to the storage system. If one skilled in the art were to follow the combined teachings of these references, the resulting system would

include the vendor-supplied driver of Starek being added into the host computer of Napolitano. There is simply no teaching or suggestion to move the vendor-supplied driver into a storage system. Applicants' prior response is incorporated herein by reference, and will not be repeated in its entirety.

In the Final Office Action, the Examiner asserts that "the logical place for a lower level vendor specific driver would be the file adapter 350 of Napolitano..." (Office Action, page 10). However, the file adapter 350 of Napolitano is not a storage system of the type disclosed in Applicants' application, or recited in the claims. For example, the disk drives 325 are not disclosed as being part of the file array adapter 350. In addition, although Napolitano is not explicit about where the file array adapter would be implemented, it appears to be an additional card that can be added into a personal computer.

In one embodiment of the invention disclosed in Applicants' specification, the storage system includes at least one storage device, a cache memory and a controller that controls access to the at least one storage device. (See e.g., Figure 8 which shows storage devices 841-842, a controller 860 and a cache 870). As the storage devices are part of the storage system 840, they are not accessible to a host computer other than via the controller 860.

Claim 1 has been amended to further clarify the distinction of a storage device including a controller capable of generating data by clarifying that the at least one storage device is accessible to the host computer only via the controller. Neither Napolitano, Starek, nor Wong discloses or suggests a storage system comprising at least one storage device and a controller, wherein the at least one storage device is accessible to the host computer only via the controller.

As shown in Figure 3 of Napolitano, mass storage devices 325 are coupled to host computer 310 through I/O unit 320 over channels 324 (Napolitano, Column 4, lines 51-60). That is, Napolitano discloses that mass storage devices 325 are accessible to the host computer both directly (i.e., through I/O unit 320 over channels 324) and indirectly (i.e., through the Adapter CPU 352 of File Array Adapter 350).

By contrast, claim 1 requires that the at least one storage device is accessible to the host computer only via the controller of the storage system. This distinguishes over the system that the Examiner alleges would result from the combined teachings of Napolitano, Starek, and

Wong, as the mass storage devices 325 are accessible to the host computer 310 via I/O unit 320, and not only via any controller in File Array Adapter 350.

In view of the foregoing, claim 1 patentably distinguishes over Napolitano, Starek, and Wong, whether taken alone or in combination. Accordingly, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

Claims 2-11 and 22-24 depend from claim 1 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejections of claims 2-11 and 22-24 under 35 U.S.C. §103(a) be withdrawn.

Claim 12

Claim 12 is directed to a method of operating a storage system in a computer system including the storage system and a host computer coupled thereto, wherein the storage system includes a controller, a cache memory and at least one storage device having a plurality of user-accessible storage locations, the at least one storage device including at least one disk drive, and wherein the controller controls access to the at least one storage device so that the at least one storage device is accessible to the host computer only via the controller. The method comprises, in response to a communication received from the host computer, acts of: (A) generating, within the storage system, data that is independent of any data passed from the host computer to the storage system to be written to at least two non-contiguous user-accessible storage locations of the plurality of user-accessible storage locations on the at least one storage device; and (B) writing the generated data to the at least two non-contiguous user-accessible storage locations without writing the generated data to at least one user-accessible storage location disposed between the at least two non-contiguous storage locations so that any data in the at least one user-accessible storage location is preserved.

As should be clear from the discussion above, neither Napolitano, Starek, nor Wong, taken alone or in combination, discloses or suggests, "a method of operating a storage system in a computer system including the storage system and a host computer coupled thereto, wherein the storage system includes a controller, a cache memory and at least one storage device having a plurality of user-accessible storage locations, the at least one storage device including at least one disk drive, and wherein the controller controls access to the at least one storage device so

that the at least one storage device is accessible to the host computer only via the controller.” Therefore, claim 12 patentably distinguishes over Napolitano, Starek and Wong. Accordingly, it is respectfully requested that the rejection of claim 12 under 35 U.S.C. §103(a) be withdrawn.

Claims 13-20, 25, and-26 depend from claim 12 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 13-20, 25, and 26 under 35 U.S.C. §103(a) be withdrawn.

Claim 21

Claim 21 is directed to a method of writing information to a logical object of a host computer, in a computer system including a storage system coupled to the host computer, the storage system including, a controller, a cache memory, and at least one storage device, wherein the controller controls access to the at least one storage device so that the at least one storage device is accessible to the host computer only via the controller. The method comprises, in response to a communication received from the host computer, acts of: (A) generating, within the storage system, data that is independent of any data passed from the host computer to the storage system to be written to a plurality of storage locations on the at least one storage device corresponding to the logical object of the host computer; and (B) writing the generated data to only the plurality of storage locations corresponding to the logical object.

As should be clear from the discussion above, neither Napolitano, Starek, nor Wong, taken alone or in combination discloses or suggests, “a method of writing information to a logical object of a host computer, in a computer system including a storage system coupled to the host computer, the storage system including, a controller, a cache memory, and at least one storage device, wherein the controller controls access to the at least one storage device so that the at least one storage device is accessible to the host computer only via the controller.” Therefore, claim 21 patentably distinguishes over Napolitano, Starek, and Wong. Accordingly, it is respectfully requested that the rejection of claim 21 under 35 U.S.C. §103(a) be withdrawn.

Claim 27 depends from claim 21 and is patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claim 27 under 35 U.S.C. §103(a) be withdrawn.

Claim 28

Claim 28 is directed to a method of writing information to a logical object of the host computer in a computer system including a storage system and a host computer coupled thereto, the storage system including a controller and at least one storage device having a plurality of storage locations, wherein the controller controls access to the at least one storage device so that the at least one storage device is accessible to the host computer only via the controller. The method comprises acts of: mapping the logical object to at least one storage location of the plurality of storage locations on the at least one storage device that is assigned to store the information for the logical object; receiving, at the storage system, a communication from the host computer identifying the at least one storage location; and generating, within the storage system, data that is independent of any data passed from the host computer to the storage system and writing the generated data to the at least one storage location in response to the act of receiving the communication.

As should be clear from the discussion above, neither Napolitano, Starek, nor Wong, taken alone or in combination, discloses or suggests, “a method of writing information to a logical object of the host computer in a computer system including a storage system and a host computer coupled thereto, the storage system including a controller and at least one storage device having a plurality of storage locations, wherein the controller controls access to the at least one storage device so that the at least one storage device is accessible to the host computer only via the controller.” Therefore, claim 28 patentably distinguishes over Napolitano, Starek, and Wong. Accordingly, it is respectfully requested that the rejection of claim 28 under 35 U.S.C. §103(a) be withdrawn.

Claims 29, 30, and 32-49 depend from claim 28 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 29, 30, and 32-49 under 35 U.S.C. §103(a) be withdrawn.

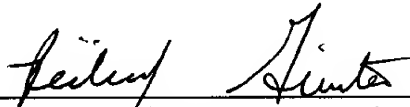
CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,

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